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A Study on the Agricultural Practices Around the Loktak Lake, Manipur, India Before and After the Commissioning of the Ithai Barrage

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ABSTRACT

The present study compares the agricultural practices of the people living in and around the Loktak lake, Manipur before and after the commissioning of Ithai barrage. The study was conducted in five villages namely Nongmaikhong, Phoubakchao, Laphupat Tera, Karang and Ithing which are located in and around the lake using research schedule, household survey and focus group interviews. Before the commissioning of the Ithai barrage people were found to practiced traditional methods of agricultural practices and modern methods of agricultural practices were found to practiced after its commissioning. In the modern practices of agriculture the tools and the methods used in traditional agriculture were found replaced by some modern tools and methods. It was observed that the traditional agricultural practices does not cause any harm to the surrounding environment or human health as compared to modern agriculture practices. The study also noted that the traditional methods of agriculture are still practiced in the villages by some people. The traditional knowledge of the communities used in agriculture need to be documented, revived or conserved which will help in the conservation of not only the surrounding environment but also for maintaining healthy human body. As compared to modern agricultural practices the traditional practices was also found cheap.

HIGHLIGHTS

- There is a great change in the agricultural practices of the people living in and around the Loktak lake before and after the commissioning of Ithai barrage.
- Traditional agricultural practices were cheap and safe for human health and soil quality as compared to modern agricultural practices.

Keywords: Villages, Ithai barrage, traditional, modern

Knowledge is a philosophical term and can be conceptualized as a set of various facts and information traits. It is of two types: scientific and indigenous. Both work as systems and hence we use the terms like Scientific Knowledge System or Indigenous Knowledge System (IKS). These two together constitute Global Knowledge System. Knowledge of the Indigenous Peoples can be treated as Indigenous Knowledge (IK) (Gupta, 2012). Traditional Ecological Knowledge refers to the knowledge base acquired by indigenous and local peoples over many hundreds of years through direct contact and interaction with the environment. It includes an intimate and detailed knowledge of plants, animals, and natural phenomena, the development and use of appropriate technologies

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for hunting, fishing, trapping, agriculture, and forestry, and a holistic knowledge, or "world view" which parallels the scientific discipline of ecology (Inglis 1993).

Sundaramari *et al.* (2011) in the study on indigenous grain storage structures of South Tamil Nadu rejuvenated the vanished grain storage structures which have been in vogue until recent times, as one of the measures to meet out the challenges posed by globalization. Rizwana and Lyaqet (2011) in their study on traditional knowledge used in paddy cultivation Raipur district, Chhattisgarh found the used of indigenous knowledge by farmers in seed germination, preventing the crop from insect/pest attack in the field and during storage. Santosh and Chhetry (2012) in their study on agro-biodiversity management related indigenous technique/ traditional knowledge (ITKs) in North-Eastern India found that crops cultivated in the organic farming system were managed using unique ITKs in terms of seed germination and sowing, preparation of land and organic manures, management of crops at different phenological stages of crops using unique agronomic practices, postharvest storages, control against pests and pathogens etc. Arya (2014) investigated the local plant species used in making of traditional agricultural implements; handles of harvesting tool and their parts in Garhwal Himalaya and found that 21 major plant species belonging to 14 families were found used in making of traditional agricultural implements; handles of harvesting tools and their parts. Elzubeir (2014) identified and described hand and animal drawn tools and implements used for agricultural operations by the farmers of Sudan with reasonably low financial investments to achieve increased agricultural production and found that farmers have been using a variety of traditional tools and implements for agricultural practices. Singh and Singh (2017) studied the traditional agriculture as a climate-smart approach for the sustainable food production and also deliberates the correlation between climate change and agriculture. Ba *et al.* (2018) explored the traditional farming and its role in sustainable development of the mountainous area based on the indigenous community of Wutai in Taiwan. Patel *et al.* (2019) highlighted the potentials of traditional agriculture in respect to natural resource conservation including soil microbial system. Similar studies on agricultural practices in different places were attempted by Blakeney *et al.* (2020); Ansari *et al.* (2021); De (2021); Manida (2021).

Loktak Lake is located between 93°46′ and 93°55′ E and from 24°25′ to 24°42′N in the southern part of the Imphal valley of Manipur. The lake is in oval shape with maximum length and width of 26 Km and 13 Km respectively. The depth of the lake varies between 0.5 to 4.58 m with average depth recorded at 2.7 m. Loktak lake can be considered as a sub-basin of the Manipur River basin. It has a direct catchment area of 980 sq.km and indirect catchment area of 7157 sq.km. There are 55 rural and urban settlements around the lake with a total population of 100,000 (LDA and WISA, 1999). The construction of Ithai barrage was started in 1971 in the downstream of Manipur river (Imphal river) and it became a controversial structure. The commissioning of Ithai barrage in 1983 resulted in the inundations of several hectares of land surrounding the Loktak lake and has brought about enormous changes in the availability of fishes and related resources and methods of fishing in the Loktak lake. Trisal and Manihar (2004) reported that inundation of large areas of agricultural land after construction of Ithai barrage has led to shifting of a large population of agricultural farmers to fisheries as the main source of income. Singh and Moirangleima (2012) also observed that high level of water maintained by Ithai dam in the Loktak lake is flooding the surrounding area. It inundated agricultural land more than twice the area it proposed to irrigate and uprooted and deprived about 10,000 people of their livelihood.

The people living in the five lakeshore villages of Loktak lake i.e. Nongmaikhong, Phoubakchao, Laphupat Tera, Karang and Ithing have their own traditional ecological knowledge in fishing, agriculture, preservation of plants and animals in relation with religious purposes, uses of animals or its parts for medicinal purposes etc. Before the commissioning of Ithai barrage agriculture was the main occupation of the people of the five studied villages and they practiced traditional methods of agriculture. But after its commissioning in 1983 the major portion of their agricultural land were submerged under water of the barrage and many farmers have shifted their occupation to fishermen. This has resulted in the decline of agricultural

productivity. The people of these villages are now practicing agriculture only in few unsubmerged portion of the land. Submergence of agricultural land is one of the biggest loss that was caused by Ithai barrage. With the submergence of large scale agricultural fields belonging to the people of the five villages the traditional knowledge used in agricultural practices by them were also almost lost. As time passes most of the traditional knowledge used by the local communities in agriculture have been lost or have undergone several changes. Hence, a comparative study of agricultural practices is made in this paper before the commissioning of Ithai barrage (i.e. before the year 1983) and after the year 1983 (i.e. after its commissioning) to assess the changes that took place in agricultural practices before and after the commissioning of Ithai barrage. The study will help in understanding the valuable traditional knowledge that is almost lost with the submergence of most of the agriculture lands and the need for the conservation, revival, documentation of traditional knowledge practiced in agriculture. The objective of the present study is to make a comparison of the agricultural practices before and after the commissioning of Ithai barrage and assess the changes that took place in agricultural practices before and after the commissioning of Ithai barrage.

MATERIALS AND METHODS

The study was conducted in five villages located in and around Loktak lake i.e. Nongmaikhong, Phoubakchao, Laphupat Tera, Karang and Ithing villages. The villages were selected following purposive sampling technique keeping in mind the aim and objective of the study and also the accessibility of the villages. 50 elderly person (10 from each village) were selected for the study of traditional ecological knowledge (Terer *et al.* 2004; McElwee, 2010; Blakeney *et al.* 2020). The elderly persons selected were above 70 years of age as the persons belonging to this age group had actually experienced the traditional agriculture that took place before the commissioning of Ithai barrage. The research schedule used in traditional ecological knowledge study in agriculture. It was prepared referring Hart and Mouton, 2005; Karthikeyan *et al.* 2009; Manida, 2021 and in consultation with other relevant literatures.

After the household survey focus group interviews were conducted with knowledgeable persons of the villages and the information collected was verified with the published literatures (Singh and Singh 1994; Trisal and Manihar 2004) and experts from Loktak Development Authority (LDA), Manipur.

The data obtained from the survey was compiled and interpreted. Village*wise response percentage and overall percentage of the five villages was calculated for all the questions using Microsoft Excel. The calculation of percentage was done as follows:

PA (% availability) = Frequency of the responses/ total number of the respondents in the villages × 100.

RESULTS AND DISCUSSION

Table 1 presents the opinion on the status of traditional knowledge and modern knowledge in agriculture. All the 50 respondents from all the villages thought that their traditional knowledge in agriculture is weakening at present. 36% of the respondents as a whole found that because of impact of modernization the use of traditional knowledge in agriculture is weakening and 70% of the respondents from Laphupat Tera village agreed that impact of modernization is weakening traditional knowledge in agriculture. 46% of the respondents responded that the use of modern knowledge and technologies in agriculture were more convenient than the traditional ones while 54% felt traditional practices were more useful.

The respondents found that the use of modern technologies or tools in agriculture was more convenient than the traditional ones as they saved time, have higher accuracy, were light in weight, comfortable to use as well as labour cost was comparatively less. Modern tools were also found to be more efficient, strong and different varieties were also available. However, some respondents felt that traditional practices in agriculture were more economical and useful. The study is similar with Kalanda-Sabola *et al.* (2007) who examined local ecological knowledge and traditional management practices in lake resources management on Chisi Island and found that Chisi inhabitants have developed and maintained some local ecological knowledge and practices that can have significant implications in scientific studies and on the management of lake resources on the Island. Hence,

Table 1: Opinion on traditional knowledge and modern knowledge in agriculture

Particulars	V_1 N=10	V_2 N=10	V_3 N=10	V_4 N=10	V_5 N=10	Overall N=50
(1) Is your traditional knowledge in agriculture weakening in present day?						
1. Yes	10 (100)	10 (100)	10 (100)	10 (100)	10 (100)	50 (100)
2. No	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
(2) If traditional knowledge in agriculture is weakening in present day, if so give reason.						
1. Traditional knowledge used is not suitable with the present system	1 (10)	0 (0)	1 (10)	3 (30)	0 (0)	5 (10)
2. More agricultural products can be produced with modern tools in short time	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	1 (2)
3. Increase in human population	0 (0)	1 (10)	0 (0)	3 (30)	0 (0)	4 (8)
4. High level of water maintained after commissioning of Ithai dam	3 (30)	4 (40)	1 (10)	3 (30)	3 (30)	14 (28)
5. Impact of modernization	4 (40)	3 (30)	7 (70)	0 (0)	4 (40)	18 (36)
6. Increasing human intelligence	3 (30)	1 (10)	0 (0)	0 (0)	4 (40)	8 (16)
7. Improved technology of agricultural tools	0 (0)	0 (0)	2 (20)	0 (0)	0 (0)	2 (4)
8. Unavailability of traditional tools	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)	1 (2)
9. Because of development	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)	1 (2)
10. Because of scientific improvement	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)	1 (2)
(3) Is modern knowledge and technology in agriculture more convenient than traditional system?						
1. Yes	4 (40)	3 (30)	6 (60)	1 (10)	9 (90)	23 (46)
2. No	6 (60)	7 (70)	4 (40)	9 (90)	1 (10)	27 (54)

Figure in parentheses indicate the percentage of each category.
V_1 = Nongmaikhong, V_2 = Phoubakchao, V_3 = Laphupat Tera, V_4 = Karang, V_5 = Ithing

a balance of both traditional knowledge and modern technology is necessary for effective agricultural practices in the villages.

Table 2 represent tools used before the commissioning of Ithai barrage (i.e. before the year 1983) in agriculture and its replacement. In all the five villages five tools were used before the commissioning of Ithai barrage (i.e. before the year 1983) in agriculture. The five tools were Cow/Bullock/Buffalo, *Langon* (tool for plough), *Suk* (tool for dehusking paddy), *Sumban* (tool for grinding paddy) and *Chakri* (tool for grinding paddy). After the commissioning of Ithai barrage these have been found replaced by another five new tools. Cow/Bullock/Buffalo was found replaced by Tractor or Fosun and Kubota (vehicle for tilling agricultural field), *Langon* (tool for plough made up of wood or iron) replaced by Tractor or Fosun and Kubota (vehicle for tilling agricultural field), *Suk* (tool for dehusking paddy) replaced by Grinding mills, *Sumban* (tool for grinding paddy) replaced by Grinding mills and *Chakri* (tool for grinding paddy) replaced by Grinding mills.

In the village-wise reasons for not using the tools at present time in Nongmaikhong village the reason was because of increasing human intelligence. In Phoubakchao village the reason was because of modernization, development and new inventions. In Laphupat Tera village the reason was because of human comfort. The reasons in Karang village was because of new technology introduced and modernization while in Ithing village the reason for not using the tools now was because of less labour required, saving of time, modernization and loss of Cow/Bullock/Buffalo as there was less place for grazing.

Table 3 represents traditional knowledge used in agricultural practices in the five study villages before the commissioning of Ithai barrage. In four villages except Ithing agricultural practice was done in the village itself in the past. No agricultural practice was done in Ithing village in past as this village is an island village and there were less land for agricultural purposes. But people of Ithing villages practiced agriculture in nearby Thamnapokpi and Naransena villages as they have

Table 2: Tools used before the commissioning of Ithai barrage (i.e. before the year 1983) in agriculture and its replacement

Name of the tool	Purpose	Replaced by	Village-wise reasons for not using the tools now
1. Cow/Bullock/Buffalo	Ploughing	Kabota/Fosun/ Tractor	Nongmaikhong village: Because of increasing human intelligence.
2. *Langon* (tool for plough made up of wood or iron)	Ploughing	Kabota/Fosun/ Tractor	Phoubakchao village: Because of modernization, development and new inventions
3. *Suk* (tool for dehusking paddy)	Grinding tools	Grinding mills	Laphupat Tera village: Because of human comfort.
4. *Sumban* (tool for grinding paddy)	Grinding tools	Grinding mills	Karang village: Because of new technology introduced and modernization.
5. *Chakri* (tool for grinding paddy)	Grinding tools	Grinding mills	Ithing village: Because of less labour required, saving of time, modernization and loss of Cow/Bullock/Buffalo as there is less place for grazing.

Table 3: Traditional knowledge used by the local communities in agricultural practices in the five villages before the commissioning of Ithai barrage

1. Site selection for agriculture	Agriculture was done at any place as all the lands were mostly fertile and depending on the species of paddies to be cultivated.
2. Ploughing (process, tools required)	Cows/Bullocks, Buffaloes and *Langon* were used.
3. Soil fertility	As all the lands were mostly fertile, fertilizers were not used. Sometimes straw, *phumdi*, cowdung were used.
4. Soil conservation	*Palley*, *Louree* and *Phidom* were made for conservation of soil and water.
5. Sowing of seeds	Paddy seeds were sown in the field using techniques such as *Punghun*, *Phamphen* and *Lingba.*
6. Irrigation	Rainwater and water from Loktak lake was used.
7. Removal of weeds (process, tools required)	Weeds were removed with *Ukai samjet* or *Ukai ananba* tools.
8. Pesticides control	No pests were there.
9. Disease control	No diseases were there.
10. Fencing and protection of crops from animals	No fencing was done. Sometimes fencing was done with bamboo.
11. Harvesting (process, tools required)	Sickle as tool for harvesting was used.
12. Grain separation	*Chirong* was used along with *Phak.*
13. Fanning of leaves	*Humai*, a tool for fanning was used.
14. Grinding grains (tools required)	*Chakri, Sumban, Suk, Yangkok* tools were used.
15. Measuring of grains (tools required)	Paddy was measured in *Sangbai.*
16. Drying of crops (process, tools required)	Dried in *Phaklen* or *Phoura* mats.
17. Storing of crops	Keep in *Kei* or in *Kot.*
18. Any other traditional knowledge use	None

their own agricultural land in these two villages. In all the five villages paddy was the main agricultural crops cultivated. Traditionally any site could be selected for agriculture as all the lands were mostly fertile and depending upon the species of paddy to be cultivated. For local species of rice (*Oryza sativa* L.) like *Touthabi* lowland was preferred while other local species like *Moirang phou*, *Langmanbi*, *Tumai*, *Changlei* highlands was preferred.

Cows/Bullocks and buffaloes were used for ploughing. Single buffalo was used and it was known as *Tomyal.* Cows/Bullocks were mostly used in pair and was known as *Pabot*. Tool used for ploughing was *Langon*, which was made from *Toona ciliata* (Tairen) tree species. The study is in agreement with Arya (2014) who noted that local plant species such as *Quercus leucotrichophora*, *Q. semecarpifolia* and *Q. floribunda* were commonly used in making of traditional agricultural implements; handles of harvesting tool and their parts in Garhwal Himalaya (India).

As land was mostly fertile, fertilizers were not used very often. Sometimes organic materials like cowdung and straw were used as fertilizers. After harvesting of paddy and before next cultivation straw was burnt to increase the fertility of land. *Phum* were also burnt in the land to be cultivated to make the soil fertile. Ansari *et al.* (2021) also documented the agriculture based indigenous traditional knowledge in Manipur, India. *Palley*, *Louree* and *Phidom* were made for conservation of soil and water from the cultivated agricultural field. *Louri* is a mud wall smaller than *palley* (a mud wall of 2-3 feet high surrounding the boundary of the agricultural field) and is about ½ to 1 feet high made inside the *palley* in agricultural field. *Phidom* is a small mud wall partition made inside *palley* and *louri* in cultivated field to prevent draining of water.

Paddy seeds were sown directly in the field with hand by spraying (known as *Punghun*). This technique is used for *Touthabi* species of paddy. Seeds were also sown by spreading with hands after soaking in water for 2-3 days and after germination. This technique is known as *Phamphen.* Rizwana and Lyaqet (2011) in their study on traditional knowledge used in paddy cultivation at Raipur district, Chhattisgarh also found the use of indigenous knowledge by farmers in seed germination by dipping in water, preventing the crop from insect/pest attack using cowdung and straw during storage.

Seeds were sown in one place at home and when grown up plucked and transplanted in the main paddy field. This technique is known as *Lingba* (transplanting). Local species of rice (*Oryza sativa* L.) such as *Touthabi, Moirang phou, Langmanbi, Tumai, Kumbi, Naran phou, Sangjamba, Awjiri, Phouren, Chenglei, Sang sangba* were cultivated in the past. The study is in line with De (2021) who assessed the traditional knowledge practices of North East India for sustainable agriculture. In Karang village *Touthabi* species of paddy was cultivated as this species of paddy grows in fresh water and Karang is an island village. This species of paddy is also able to outgrow and survive a slow and natural increase in water levels by making its body gradually rise above the water. Rainwater and water from Loktak lake was found used for irrigation purpose. Weeds were removed with *Ukai samjet* (toothed harrow) or *Ukai ananba* (smooth harrow) tools. The tools was pulled by cows and rolled over in the cultivated area to remove the weeds without any disturbance to the paddy. The remaining weeds if any were removed manually. Pest and disease control measures were not taken up in the past agricultural practices as there were no or very few pests and diseases problem. No fencing was done to protect crops from domestic animals like cows, buffaloes etc. as there were abundant grazing fields available for them and they do not enter agricultural fields and eat the crops grown there. Sometimes if there is any need for fencing, it was done using bamboo.

Sickle as tool was found used for harvesting of crops. Matured paddies were gripped with one hand and cut at the bottom of the plant with sickle by other hand. In harvesting of *Touthabi* species of paddy boats were used along with sickle as it is grown in wetlands. For grain separation, *Chirong* (wooden made tool having three fingers like branches) was used along with *Phak* (bamboo made mat). The harvested paddy was spread in *Phak* and hit with *Chirong* to separate paddy from the leaves. Rope (*Phou thouri* made from straw) was also used where the harvested paddy were made into bundles by tying it with *phou thouri* and thrashing the bundles on the ground. *Humai*, a tool for fanning made from bamboo was used to separate the leaves from harvested paddy. In *Touthabi* species of paddy

no fanning was required. Elzubeir (2014) also noted that farmers of Sudan have been using variety of traditional tools and implements for agricultural practices which included plough, sickle and winnower. Similar tools were used in the present study also.

Chakri, Sumban, Suk made up of *Toona ciliata* (Tairen) species of wood was used for grinding grains and *Yangkok* for dehusking of the grinded paddy. The harvested paddy were first grinded in *chakri* (a circular shape grinding tool operated by spinning with hands) and then put in the *sumban* (large bowl shape wooden tool) and hit with *suk* (a long, wooden pole) to remove husk. *Yangkok* (a circular bamboo made tool) was then used to remove the remaining husk from the grinded paddy. The study is in agreement with Karthikeyan *et al.* (2009) who identified and described 21 traditional agricultural tools from 10 districts of Tamil Nadu used in ploughing, intercultural operation, harvesting, post harvest, milling, measuring tools etc by the farmers.

Paddy was measured in *Sangbai,* a measuring basket made up of bamboo (1 *Sangbai* was equivalent to 30 Kgs of paddy). For drying of crops the harvested paddy were dried in *Phaklen* or *Phoura* mats made up of *Arundo donax* (Yenthou) species. The paddies were stored in *Kei* (a large place made for storing paddy) or in *Kot* (a small place made for storing paddy). Both *Kot* and *Kei* were made up of *phaklong* (bamboo made mats) by surrounding it. Similar finding was made by Sundaramari *et al.* (2011) in the study on indigenous grain storage structures of South Tamil Nadu also reported the used of *Kulumai, Kaambara, Kudhir, Modappanai* etc. as indigenous storage structures by farmers. No prevention from rats was necessary as there was less rats in the past.

In modern days Tractor or Fosun and Kubota (vehicle for tilling agricultural field) are used instead of the traditionally used Cow/Bullock/Buffalo and *Langon*. Chemical fertilisers and pesticides such as Urea, Diamond, Potash etc. are also used replacing the traditional ones. People prefer to cultivate high yielding variety of paddy than the traditional ones because of their high yielding nature and lesser maintenance cost than the traditional varieties. In place of *Chakri, Sumban* and *Suk* grinding mills are used. Other tools and traditional knowledge used in agriculture is also still prevalent till now. At present agricultural practices for Phoubakchao and Laphupat Tera villages is done in the villages itself as they still have some agricultural lands which are not submerged by the Ithai dam since they are located at higher altitude. People of Ithing village practice agriculture in Thamnapokpi and Naransena villages. Due to the submergence of agricultural field in the villages by Ithai dam for Nongmaikhong village the people took up agriculture practice in Ithai village, for Karang in Kairenphabi, Wango, Napet, Haotak and Kumbi villages.

Loss of traditional knowledge in fishing and agriculture in the lake is also linked to the commissioning of Ithai barrage in 1983. According to Singh (1993) the demerits of the Ithai barrage are flooding of the agricultural land surrounding the lake, damage to natural fishery of Manipur and loss of migratory fishes, damage to aquatic plants used as food and has commercial value due to inundation. It also affected the ecology of the Keibul Lamjao National Park and the existence of endangered Sangai Deer in Keibul Lamjao National Park, increase the rate siltation of the Loktak lake, increase accumulation of Phumdies inside the lake, less grazing ground of cattle due to inundation, unemployment problem of the people due to inundation of agricultural lands, grazing ground and failure in phoom fishing.

In present day though the traditional knowledge used in agriculture has reduced drastically almost all agricultural practices that was used before the commissioning of Ithai barrage is still practiced by some people. In traditional agriculture which was practiced before the commissioning of Ithai barrage the fertilizers used in agriculture was organic in nature and not harmful for the surrounding environment or to human health who consumed food grown in such organic fertiliser. While the chemical fertilizers which are used in modern agricultural practices causes degradation of the surrounding environment and when humans consumed food grown using such type of fertilizers they affect human health also. Overall it can be said that the people living in the five study villages around the Loktak lake i.e. Nongmaikhong, Phoubakchao, Laphupat Tera, Karang and Ithing have got great traditional knowledge in agriculture. If this knowledge is utilized properly in a scientific manner it will lead to the overall improvement of

the surrounding environment and the traditional knowledge has to be documented, revived or conserved. Unlike the expensive modern methods of agricultural practices the traditional methods of agriculture is also found to be cheap or inexpensive.

CONCLUSION

In the present study it is found that people of the five study villages used traditional knowledge for agricultural practices before the commissioning of Ithai barrage. After the commissioning of Ithai barrage the villages used modern methods of agricultural practices. The traditional tools used in agriculture were replaced by modern tools. Traditional methods of agriculture was not harmful for the surrounding ecosystem or to human health as compared to modern methods of agriculture like in the case of the uses of fertilizers. The fertilizers used in traditional methods of agriculture was totally organic and not harmful for the surrounding environment but the modern agricultural fertilizers contain harmful chemicals which is not only harmful for the surrounding environment but also they are harmful to human health when humans consumed food which are grown using chemical fertilizers. Traditional practices of agriculture that was used before the commissioning of Ithai barrage is still practiced by some people. Such traditional knowledge of the communities needs to be documented, revived or conserved which will help in the conservation of the environment. Moreover, the traditional methods of agriculture is cheap or does not required much expenditure unlike the expensive modern methods of agricultural practices.

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